ON A CASE OF "NEGRO LETHARGY" OR

"THE SLEEPING SICKNESS" OF AFRICA

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be in a very early stage, was not initiated till about the end of April, though it is impossible to fix the date by the occurrence of any distinctive symptoms, the clinical picture being so dominated by signs and symptoms referable to the tumor cerebri.

Whether the tumour in the brain, which presented all the naked eye characters of a tubercular growth, is or is not to be considered as a genetic sequence of the old quiescent foci of disease in the lungs, it seems very probable that the incipient tubercular meningitis owed its origin to the pre-existence of the tumour. Its development was probably the beginning of a general tuberculosis which, had the patient lived longer, would have shown itself also in the thoracic and abdominal organs. It is interesting here again, as in the last case, to find the tubercular meningitis in the main following the distribution of one of the middle cerebral arteries, and in this situation creeping up over the left parietal region.

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X.—*On a case of "Negro Lethargy" or "the sleeping sickness" of Africa.* By Stephen Mackenzie, M.D. *Read November* 14, 1890.

Mandombe was born and has lived all his life in the village called Tombo, situated in a valley about 1300 feet above the sea, and from which the hills run up to a height of 400 feet. The whole of the little village of about 300 souls appears to have been decimated by the ravages of "sleeping sickness;" two or three people died every week till scarcely any one was left. Some of the folk fled to other places. Mr. Richards, a missionary on the Lower Congo, knows of no village where the mortality has been so great.

The villages on the hills close round, however, have not been exempt from the disease, and, whereas it has occurred in this particular instance in a valley, it by no means seems located wholly in such places. Close by the village of Tombo is a swamp caused by the streams coming down from the neighbouring hills, and on this spot has grown up a wood which harbours an immense amount of decaying vegetation and consequently fosters malarial miasma.

Family history.—Mandombe's mother died of sleeping sickness, that is to say of a rapidly fatal form of disease, characterised alike by increasing weakness, wasting, and sleeping attacks; the duration of the whole malady was only a few months. She developed no other symptoms whatever, Two sisters died from the same disease: the case of the one was like that of the mother, whilst the second sister appears to have suffered in addition from dropsy. His father died when he was a little fellow; he does not know how. Nearly all his relations on both sides of the family have been carried off by this fatal malady, and Mandombe's own impression is that the mischief is hereditary. On this point Mr. Richards says that people who live together in the same house frequently seem to suffer; brothers and sisters consequently very frequently develope the disease. He, however, does not feel sure of its hereditary nature. Mr. Richards instanced the case of one man who had three wives, he himself died of sleeping sickness, and two of his wives

speedily perished of the same disease; the third seemed to have a commencing attack, but she got over it. Whether this latter was really a case of the genuine disease or not is quite open to question.

Personal history.—Mandombe is a young man of about twenty-two years of age, married, with two children, one boy and one girl, wife and both children are well, he himself has all his life, as long as he remembers, enjoyed good health (with the exception of one or two attacks of malarial fever). He is an unusually bright and energetic fellow, and Mr. Richards, who has known him for eleven years, considers him an exceptional man in these particulars. He has been employed as a carrier in connection with the transport work on the Congo, and in this occupation has always distinguished himself as a trustworthy man and faithful servant. In the recent letter which I have received from Mr. Ingham on the Congo and which was addressed to Mandombe there occurred this sentence: "I am very sorry that you have left me to go to England, for I have no one now who, like you, will work behind my back as well as before my face."

History of present illness.—In June last Mandombe came to England at his own request partly to see if we could help him in connection with the sleeping sickness which he had apparently contracted about the commencement of the present year, and partly in the hope that the study of his case in England might lead to the discovery of a cure for other sufferers from the disease. He first suffered from the oncoming from a persistent kind of diarrhœa which lasted for about a month. From his account this was not an attack of dysentery. After a month the diarrhœa ceased, and he then commenced to feel a dulness and heaviness, though at this time he did not betray much drowsiness.

Condition in June.—When Mandombe first came to me his intelligence was good. Facial expression varied, mental state alert. He responded eagerly to questions, and was very vivacious, and sometimes almost facetious. Mr. Richards noticed, however, at this time a drooping of the eyelids, and a peculiar heavy expression which he considers pathognomonic of sleeping sickness. He slept well, but not excessively, although every now and then in the day he certainly was peculiarly drowsy. He complained of no pain, *and on careful examination at the hospital he betrayed no evidence of organic disease.* His urine was carefully tested, and sphymographic tracings of his pulse were taken. He had an inflammatory

condition of the skin of his legs resembling eczema which soon healed under local treatment.

Condition on October 4.—Intelligence still good, but a very great change has come over him, instead of responding rapidly to questions when they are put to him, he evinces a mental fatigue and lethargy which are striking. He understands what is said, but to think consecutively or put forth any effort of memory is now entirely beyond his powers. He sleeps well, but although he has not betrayed any sleeping attacks during the day, when away in the country during the months of August and September, drowsiness during the daytime seems of late to be increasing on him. He likes to go to bed early at night, and it is difficult to get him up for breakfast in the morning.

Motor power.—His motor power is becoming increasingly impaired. During this summer I have employed him chopping wood, but during the past five weeks this has become quite too much for him, not only does tremor accompany his smaller movements, but great weakness characterises all the larger ones. This tremor has so increased on him lately that it is with great difficulty for the last week that he has been able to put any food into his mouth. If he attempts to rise from a sitting posture he does so with great difficulty and deliberation, laying hold of various objects at hand to assist him in rising to his feet. Finally he walks with the decrepit gait of an old man, instead of with the firm step which he had a few months ago. It takes him an hour to dress in the morning, and he experiences the greatest difficulty in creeping downstairs, his gait is uncertain, tremulous, and feeble, and he seems scarcely able to stand upright. Mr. Richards says that he has frequently seen natives thus suffering walk with a staggering gait.

October 5.—Tremor and weakness are becoming excessively marked, he is evidently becoming rapidly worse. He sometimes passes his urine beneath him in bed. To-day he could scarcely protrude his tongue, which was excessively tremulous. He still complained of no pain, although on palpation over the right iliac fossa he evinced signs of tenderness.

He complained of neuralgic pains for about a week in September, before and behind the ear. On administration of antipyrin gr. v. and afterwards exalgine gr. iij, this cleared away.

October 5, Evening.—Mandombe was so weak that he was unable to reach his bedroom to-night, but fell on the floor,

where he remained and apparently fell asleep until he was found, and conveyed to his room. It was then found that his temperature was raised, 103° F. He soon became bathed in a profuse perspiration, and fell asleep.

October 6.—This morning his pulse was for a while 164 per minute, and his respirations at 60 per minute; the latter were shallow and restrained. He was still soaking in perspiration and had passed his water under him during the night. He was lying on his side with his legs flexed on his abdomen. He complained of abdominal tenderness.

For the foregoing notes, and for much valuable information on negro lethargy at the Congo, I am indebted to Dr. Gratton Guinness who kindly placed the patient under my care.

Mandombe was admitted into the London Hospital on October 6, 1890. He presented the usual physiognomy and colour of the negro race. His body was moderately nourished, the skin dry, the mucous membranes of natural colour. His tongue was tremulous, rather dry, flabby, and indented by the teeth. The liver dulness commenced above at the seventh rib, and extended to the lower costal margin. He complained of pain in lower part of right chest, and flinched when the liver was percussed. The abdomen measured 34¼ ins. in circumference, and there was a doubtful fluctuation wave. His pulse was 138, of fair force and regular. The heart's apex beat in the sixth space, four inches from the mid-sternal line. No murmur audible, first sound at apex rather toneless. The lungs were normal except for a few râles at the bases. His conjunctivæ were injected; pupils of medium size, equal, and reacted to light. The retinal veins were large and dark, the edges of the papillæ well-defined. Examination of his blood showed 110 per cent. of coloured corpuscles, 70 per cent. of hæmoglobin, 1 colourless to 275 coloured corpuscles. Urine 1034, acid, albumin a trace, no sugar. His temperature was 101·3° F. on the morning of admission, but fell to 97° in the evening.

His general appearance on admission was not that of a person profoundly ill. He had been sleeping most of the time since his admission. When roused he appeared fairly intelligent and observant of what was going on around him. His conversation was practically limited to monosyllabic answers to questions. He did not seem reticent or morose, simply quiet or lethargic. His motor powers were very

feeble; he walked in a tottering manner, and he was extremely tremulous, especially in the upper extremities and tongue. Cutaneous sensibility (to pin prick) was everywhere present. The knee-jerks were good, if anything rather glib; superficial reflexes present, no ankle-clonus.

October 7.—My house physician, Mr. A. H. St. L. Fagan, thought it probable that the patient might be the subject of filarial infection, and examined his blood this evening with the object of determining this point. Each slide examined was found to contain on the average about six embryo filariæ sanguinis hominis.

His condition between the time of his admission and the present time may be summarised. He was put on a nutritious diet, was given a warm bath each day, and ordered a saline diuretic, with sulphate of magnesium. This, with occasional five grain doses of quinine, is all the medicine, except aperients as required, he has taken. His mental condition has been slightly variable, but on the whole has progressively deteriorated. Frequent mention occurs in the notes of the patient being in a kind of stupor, and being "downcast." He rouses up at times, however, and appears to be interested in letters from home which have been read to him by the sister or nurse. He hardly ever converses with anyone spontaneously, but replies to questions put to him, usually slowly and in monosyllables. His condition is perhaps best described as one of lethargy or torpor. How much of this is due to the unusual circumstances in which he is placed is difficult to estimate, but it contrasts very strongly with his condition when he first came to this country. As regards sleep, it may be generally stated that he has frequent short sleeps of from half an hour to an hour both by day and night, that he rarely sleeps for long together, three hours and a half being about the maximum even at night, and that his sleep in the aggregate does not exceed the usual amount of health, and indeed is generally below this. Careful records have been kept of the amount of sleep he has had since he has been under observation, which show that the average amount of sleep is three hours fifteen minutes by day, and four hours fifty-six minutes by night, or eight hours twenty-nine minutes in the twenty-four hours. The most noticeable peculiarity is the relatively large amount of sleep in the day-time. The last two or three days he has slept much more than at any previous time, and, in fact, he has been more or less constantly asleep.

His muscular power is certainly feebler, so that he cannot sit up long without fatigue. Tremor has been a conspicuous feature of his case. It was very great when he first came to the hospital, just after he had been found in a state of insensibility, with high fever and profuse perspiration. He had such an attack on October 27. He had a prolonged rigor, accompanied by extreme tremor, which persisted after the rigor. His temperature, which had been nearly normal for some days, went up to 103°. His pulse was 120, respirations 32. His tongue was red, moist, and tooth-indented. The temperature came down the next day, but the tremor remained very great.

His temperature has been irregularly febrile, remittent in type, moderate in degree, and presenting no regularity in its exacerbations, but preserving the usual characteristic of evening maxima. His pulse is usually above 100, frequently 120, and has been as high as 144 and 150. No fresh signs have developed in his lungs. His tongue is exceedingly tremulous. His appetite has varied. As a rule it has been good, but when more febrile he has eaten but little. His bowels have been as a rule confined; when acted on by medicine the motions have been loose, dark brown, with occasional blood. The abdomen has remained rather large, with doubtful fluctuation. The pain in the hepatic region soon disappeared. The liver and spleen are not enlarged.

Urine is scanty (not averaging 20 oz.), and as a consequence concentrated and of high specific gravity, generally about 1034, sometimes as high as 1040. Recently it has fallen a little, and on Nov. 8 was 1016. It is dark brown in colour, usually acid in reaction, deposits sediment of amorphous urates and phosphate of lime. The urine contained a trace of albumen on the two first days of observation: never since. Sugar and bile pigment have never been present. He now passes urine and fæces involuntarily. The patient has lost weight; admitted, he weighed 10 st. 1 lb.; on Oct. 19, 9 st. 9 lbs.; and on Oct. 26, 9 st. 5 lbs.

A bedsore, with a long and deep sinus, has formed over the sacrum. His gums have become recently soft and spongy and bleed readily. Breath offensive.

The number of embryo filariæ in his blood has been systematically counted by Mr. Fagan and Mr. Jones. They have always been present at all hours of the night and day, but their numbers have varied at different times of the twenty-four hours, and on one day as compared with another. The exact periodicity usually observed in this condition has not been present; no doubt owing to the pyrexia from which to a greater or less degree he has suffered since he has been under observation. Dr. Patrick Manson, who was the first to point out the periodicity of filarial migration, has also shown that its normal rhythm is always disturbed by the pyrexial state. In the present case the rhythm has been most irregular, sometimes the maximum being in the evening or night, sometimes in the afternoon, and occasionally, but rarely, at midday. As regards numbers we have very exact information. Mr. Fagan has always counted the number in 20 cubic millimetres of blood. The maxima have been usually from 20 to 35 until quite recently; 35 has been reached on four occasions, once at 4 P.M., and three times at 8 P.M. But within the last week these numbers have been exceeded, reaching 55 at 8 P.M., on Nov. 7; 78 at 8 P.M., on Nov. 8; 55 at midnight, on Nov. 9. Assuming his total volume of blood to be one-thirteenth of his body weight, and that his blood generally contains filariæ in the same proportion as that drawn from the finger pad, the maximum number of filariæ in his blood at any one time would be 118,965,600. There are two minor points to be noted as regards the filariæ. 1. Their variability in size; a large number being much below the average size. 2. The brief viability of the filariæ when removed from the body. In other cases I have watched they have usually lived in a slide, without special precautions, for two or three days, and have been observed to live for a week. In this case the majority perish in the course of a few hours, and the longest period they have been found alive by others and myself has been about 18 hours.

A microphotograph of the embryo filariæ brings out very well the two sizes which were observed. Dr. Patrick Manson has since pursued an inquiry on the nature of the filariæ present in this case, and in some other negroes from the Lower Congo, and has established that the smaller one is a new and hitherto undescribed species (vide *Lancet*, Jan. 3, 1891, p. 4). It appears from his observations that the larger filariæ differ in some respects from the *Filaria Sanguinis Hominis* (Lewis) met with in Asia. There thus appear to be at least three variations of filariæ found in the blood of the human subject up to the present time, which Dr. Manson proposes to designate. 1. *Filaria Sanguinis Hominis* (Lewis). 2. *Filaria Sanguinis Hominis Major*. 3. *Filaria Sanguinis*

Hominis Minor. The two latter were present in Mandombe's blood, and are shown in the micro-photograph (Plate II).

Such are the chief facts in this case, which may be regarded as a characteristic example of what has been named Negro Lethargy or Sleeping Sickness. The term "Sleeping Sickness" must not be understood to indicate a tendency to vomit, but sickness is used as synonymous with "illness," as in the instance of the "falling sickness" and epilepsy.

According to Hirsch, who gives a brief but admirable account of the disease in his Handbook of Geographical and Historical Pathology" (New Sydenham Society, translation by Dr. Creighton, vol. iii, p. 595), attention was first called to it about the beginning of this century by Winterbottom, a surgeon in the British service, as a disease of the natives along the Bight of Benin, which consisted in a peculiar state of lethargy, and was always fatal sooner or later. Our more precise information about the malady dates from 1840, when Clarke published the observations that he had made of it in Sierra Leone. It has since become the subject of a large number of inquiries by English and French observers, the bibliography of which will be found in Hirsch's work.

The following clinical characters are described by Hirsch: The onset of the distinctive morbid phenomenon, a state of lethargy or reverie, is often preceded for a considerable time by a series of prodromal symptoms which are so characteristic that those in the individual's company are never deceived as to the fate in store for him. He complains of weakness, especially after considerable exertion, of low spirits, disinclination to work, pain or a feeling of weight in the head, and giddiness. He has a desire to give himself up to repose at other than the usual hours, seeking out some solitary and quiet spot wherein to pass the time half asleep. Although he may strive against that disposition with all his might he cannot altogether conquer it, and it is only amidst the livelier kinds of excitement that he is able to remain brisk. His gait at the commencement of the malady is still firm, although he is so easily tired; but as the disease proceeds and the lethargy becomes overpowering, he goes about with his eyes half shut and his walk becomes unsteady like that of a person in drink. There are no disorders noticeable in the other functions so considerable as to suggest a profound and mortal disease; unless it be a lowering of the body temperature, which makes the patient feel the need of warmth and causes him to sit in the sun, together with a certain degree of

slowness and sometimes irregularity of the pulse. In severe cases there is an evening rise of the temperature to 38·5° C., or even above 39° C. (100° to 102° F.), with a quick pulse (Corre). The patient's sensory perceptions as well as his intellectual faculties are quite unimpaired; if he is not talkative, he answers promptly and intelligently when spoken to. As the disease progresses his expression betokens dulness of thought; his gait becomes slow, uncertain, and tottering; although when he is thoroughly interested he can still execute any kind of movement. Meanwhile the somnolence has increased so much that he can hardly control it; it becomes difficult to rouse him, and not unfrequently he falls into a lethargy in the midst of the loudest noises or over his food. "J'ai vu le malade, que je pressais de boire," says Nicolas, "essayer de porter le verre à sa bouche et s'assoupir avant d'avoir achevé ce mouvement si simple;" and Gore quotes the following remark by Fergusson: "I have seen the subject of a case lying fast asleep with a mouthful of half-chewed victuals in his cheek; he had, in fact, fallen fast asleep while eating his dinner." Concerning the nature of this somnolence, Corre has the following: "La somnolence, exceptionellement poussée jusqu'au coma, rarement continue, n'est pas rigoureusement constant. Tous les malades atteints de nélavane ne dorment pas; beaucoup demeurent couches, les paupières fermées, demi-occluses, ou complétement ouvertes, mais sans autre séparation d'avec le monde extérieur qu'un profond indifférentisme. Il est à remarquer que la plupart des malades véritablement somnolents vient le sommeil quand on les interroge: ou ne les a pas plutôt quittés qu'on les aperçoit étendue dans un coin de cour ou de cas."

Apart from a more or less considerable loss of the sense of touch, which serves to explain also the uncertainty in the movements, especially those of the upper extremity, there is no sensory disorder noticeable. Sometimes the memory is slightly impaired, but in other respects the faculties of the mind are intact. In many cases convulsive movements occur, without loss of consciousness, or it may be merely slight choreic movements; these are followed by temporary contractures or paralysis of certain parts, and in most cases by an increase of the lethargy. When the latter is very profound there may be involuntary evacuation of the fæces and urine. Even when the disease has made great progress there is nothing abnormal to be noticed in the vegetative functions of appetite, digestion, and nutrition. The stools are mostly

without colour, as they are apt to be in negroes, even in a state of health; the urine contains no precipitate, is of clear colour, and free from albumen. It is not until the disease has reached its acme that the patient begins to waste; at the same time the pulse becomes slow and small, the skin assumes a dried-up, earthy, or ash-coloured appearance; sometimes there is slight œdema round the ankles (but never dropsy fully developed), the drowsiness becomes continuous, increasing gradually to a profound coma, and life goes out for the most part very quietly but sometimes in a paroxysm of convulsions. Intercurrent disease, such as dysentery or pneumonia, may hasten the fatal issue, which would seem to be in any case almost inevitable. Of 179 negroes suffering from lethargy, who were under treatment by English practitioners on the Sierra Leone Coast during eleven years (1846–56 and 1859–66), the disease had proceeded to a fatal issue in 132. The duration of it (not including the prodromal stage, which is often very protracted) is from three to twelve months, or even longer.

I am able by the kindness of Mr. Grattan Guinness to supplement this admirably concise yet ample statement of Hirsch's, by some cases which have fallen under the observation of Mr. Richards.

Mr. Richards' Cases.

"Case 1.—Kati. Mr. Richards knew a woman, married; had known her for several years, when she became afflicted with sleeping sickness. She was a witch doctor, and consequently a highly intelligent woman amongst the natives. She became a Christian, and afterwards was most energetic and devoted in her life for some time. She was far above the ordinary run of lower Congo natives. The commencement of her sickness was signalised by an acute attack of religious mania, in which she commenced to pray in a loud voice, and would pray loudly and yet more loudly, till she commenced to dance in the midst of her prayer. This paroxysm would pass away after a time. At another period she had visions, in which she thought she saw the Lord Jesus personally. At this very time Mr. Richards observed that her gait was peculiar. She could not walk straight, and seemed to ramble from side to side. There was no swelling or any other symptoms visible, and no tendency to sleep. There was, however, a peculiar facial expression which Mr. Richards had noticed. The religious mania now increased, and eventually she had to be restrained from going out at all, as otherwise she would have gone to neighbouring houses and have waked people up during the night, and have committed various extravagances. She never injured anybody all this time, nor was there any tendency to suicide or homicide. She eventually became weaker, till she could not recognise even Mr. Richards. Finally she became entirely insensible, and she lay in that state for about a fortnight. Then she began to swell, and at the end of another week or ten days her features were almost unrecognisable. The poor swollen lips now became covered with sores, as she lay in an absolutely insensible condition, and was fed by her friends. From the time she became unconscious she lived for about a fortnight, and then quietly passed away.

In this particular case the woman did not sleep at all excessively, but the people who were around her recognised the peculiar facial expression which is always present in this disease, and she herself felt that the sleeping sickness was upon her, and came to know if Mr. Richards could do anything for her, and promised to obey him implicitly if he could only cure her.

The whole of the sickness lasted over some three or four months, and the woman seemed every now and then to improve under Mr. Richards' treatment of quinine and iron, hot baths, and good diet.

Case 2.—The case of a man whom Mr. Richards had known for some time, whose trouble commenced by sleep overcoming him during religious services. He would try to shake it off, but it laid irresistible hold of him. He then became weaker. Mr. Richards advised him to change the locality of his home, which he did, as a carrier; but he eventually found that this occupation was too arduous for him, and had to give it up. He became then still weaker and slept more than ever, till at last his condition became very similar to that of Mandombe.

The whole duration of the disease in this instance was about six or eight months. There was no mania, no swelling, no ulcers, and nothing but the two symptoms of sleeping and accompanying weakness.

Case 3.—Mr. Richards also cites another instance of a man who commenced to go to sleep during the services, and

who came to him complaining that the sleeping sickness had laid hold of him, and desiring to be treated. Mr. Richards gave him a 40-gr. dose of quinine, which seemed to have the effect of relieving him entirely of all symptoms for the time being. He remained well for a year, when a second attack came upon him. Mr. Richards left the Congo at this time and was unable to treat him, but has since heard of his death. This particular patient manifested his weakness in a want of personal care and cleanliness; he seemed too tired to look after himself decently.

Case 4.—A little girl, the daughter of one of the local potentates, Makokula, who was a very intelligent child. (Mr. Richards thinks it lays hold of the most intelligent all the more easily.) She commenced her sickness by the sleeping symptoms, but after some little time—he thinks about a month—she became maniacal; and after about a month of raving madness she died of exhaustion.

Mr. Richards seems to think that the term sleeping sickness has been applied to this malady, not so much on account of the sleep characterising its duration as its close. Thus, when they become exceedingly exhausted by mania towards the end of the disease, they fall into a comatose condition; but in those instances where mania is absent sleeping characterises the whole of the complaint.

Dr. Sims, of Stanley Pool, believes this disease to be similar to the beri-beri of the Indians. (No evidence of this view is given.)

Dr. Small, of America, who has laboured on the Lower Congo, seemed to think that it was a form of Bright's disease, and that the coma was due to uræmic poison. I cannot, however, find out whether he ever tested the urine of these people and discovered albumen present, and more especially if he made a quantitative analysis of the amount of urine. Mr. Richards does not think that either of these theories is correct.

Dr. Small resided with Mr. Richards for some time on the Congo in the same house, and consequently Mr. Richards had ample opportunity to see whether he ever tested the urine. He is sure he never tested the urine in the method I described to him, and he very much doubts whether he ever employed a test-tube at all.

Mr. Richards' distinct impression is that the largely preponderating number have the sleeping form of the disease,

perhaps one in ten of them only exhibiting the maniac symptoms.

Case 5.—One of the translators employed by Mr. Richard appeared to suffer from a mild form of this disease (as also great many of the country people), in which he merely slep for a moment and then woke up with a start to resume h ordinary duties. For instance, Mr. Richards would appeal t this man in connection with translation as to a certain wor and find him asleep. The man would then rouse himself an return Mr. Richards the correct answer. If Mr. Richard were to let him alone he would again go to sleep in a fe moments. This was only marked in this particular ma every now and then, and he has continued to live for number of years without developing further symptom Whereas this mild form may last for a number of years, appears occasionally to be apt to develop very rapidly in fatal direction. Paul's story already cited is an example.

Mr. Richards mentions another interesting instance of woman called Makambi, who, after suffering from the sleepin sickness in the ordinary form of it, for some time becam insensible. She was so weak that she could not get up, an with difficulty was aroused to take food and to speak to thos about her. She remained in this condition for about thre months, and eventually developed a large bedsore on one o the buttocks. Mr. Richards treated her at this time wit iron and quinine, and oiled dressings for the bedsore. Sh rallied in a wonderful way, and was afterwards able to ge up from her couch, and presently came up to religious service as she had been wont to do. For a time Mr. Richards though she had made a perfect recovery, and when he left the countr she appeared perfectly well; but he has since heard that sh has had a fatal relapse. No maniacal symptoms complicate this case. Thus, with good food and energetic treatmen with iron and quinine, two similar cases in the hands of Mr Richards and Dr. Small have apparently recovered for a time but in every instance they have eventually relapsed and died Mr. Richards thinks that if the malady has so laid hold o them as to have induced any marked degree of debility the case has probably passed the boundary line of th curable.

As regards the areas of distribution of negro lethargy according to Hirsch, it includes a large part of the west coas

of Africa, between the Senegal and the region of the Congo. Whenever the disease has occurred beyond these regions, it has been only in negroes imported from the west coast. The disease has been found only in *negroes of pure blood*, with two exceptions: one, a case of a mulatto, reported by Charsaniol; and the other, of a Creole negro boy, reported by Clarke. It has been asserted by some writers to be more common in males than in females, but those of longest experience are agreed that the number of cases is much the same in either sex. It spares no time of life, but it oftenest attacks negroes from twelve to eighteen years of age, and rarely anyone younger.

Morbid anatomy has thrown no decided light on the nature of the disease. Changes have been found in the nerve centres, but it is questionable whether these should not be regarded rather as the consequences than as the causes of the disease.

Coming to the etiology of the disease, various causes have been assigned. Hirsch says, "It is obvious that the origin of the malady has nothing to do with influences of climate and soil," but thinks "there is some foundation for the surmise that its cause will be found to lie in certain agencies bound up with the *manner of life* of the natives in those regions, but no one has succeeded hitherto in reaching anything definite concerning them; and all the hypotheses that have been tried have proved to be untenable." It has been ascribed to a toxic process from smoking "dianba" (Indian hemp), to drinking palm wine, and to criminal poisoning; but these find more objections than support. It has been attributed to depressing emotions, particularly those associated with the slave trade (nostalgia, sorrow from the breaking-up of families, or the feelings arising out of bad treatment at the hands of slave-dealers and slave-owners); but this is disposed of by the comparative rarity of the disease when the slave trade was most active, and its prevalence in negroes in a free state, in their native seats, and amidst orderly, if not particularly good, conditions. It has been attributed to *glandular swellings in the neck*, exercising pressure on the vessels going to the brain. This, however, is practically disproved, as in the present case, by the absence of such swellings, and by their inconstancy in other cases.

In the case shown this evening the presence of filariæ in the blood raises a new question, Whether this stands in any causal relationship to the disease? It is clearly a point which needs further examination, but I am quite indisposed

to believe that the association is otherwise than accidental, chiefly for the following reasons. When filarial infection gives rise to pathological consequences, it does so by inducing mechanical obstruction to the lymphatic system, and the consequences, or symptomatic expressions of the disease, are always local diseases, *e. g.* chyluria, elephantiasis, lymph-scrotum, &c. Further, Manson, Paterson, and others, have shown that filarial infection is extremely common in the regions in which it is endemic, in persons presenting no evidences of disease. I had recently another case sent to me by Dr. Gratten Guinness, believed to be "sleeping sickness." The patient, a young negro, developed acute mania, and is now in an asylum. Since filariæ have been found in the blood of the present case, Dr. Gratten Guinness has examined his blood at night, but no filariæ were found. Subsequently, on Dec. 7, 1890, Dr. Manson and I visited this patient, and on examining his blood found it to contain filariæ. They were not numerous, and corresponded in size and character with the smaller ones found in Mandombe's blood. I regard the occurrence of filariæ in the blood in the present case as an accidental association.

A theory, which has found favour with some familiar with the disease in its haunts, is that it is of a malarial nature. It is well known that there is a form of malarial intoxication which has been termed "comatose pernicious malaria." This, however, is a rapidly fatal form of disease, differing widely from the essentially chronic disease in question. Many of the characteristic symptoms of malaria, moreover, are wanting, such as splenic enlargement, retinal hæmorrhages, and paroxysmal attacks. We have at the present time, probably, an accurate means of diagnosis of malaria, in the presence in the blood of the plasmodium malariæ. The blood has been examined with the highest powers of the microscope, in the present case, without the discovery of any such changes in the coloured blood-corpuscles or the detection of melanæmia. I think, therefore, that malaria may be safely eliminated as the cause of the disease.

What the exact nature of the disease is, is not elucidated by the study of the present case, and, probably, could not be settled by a single case. The symptoms indicate some affection of the highest nervous centres without definitely pointing to its precise nature.

Postscript.—The patient continued in a very lethargic

condition after he was exhibited to the Society on 14th November, and gradually became weaker.

December 2.—The patient up to yesterday was in a lethargic condition, but becoming perceptibly weaker day by day. He has only spoken in monosyllables, or used simple phrases, such as "Good morning." Yesterday morning was noticed some difficulty in swallowing, and he put his hand to his throat during deglutition. On the evening of 30th November his head was a little retracted. Yesterday morning his head was more retracted, and has remained so. Attempts to flex it appear to cause pain. He is now, 3 P.M., lying with his head markedly retracted, and the body is twitched by convulsive movements. His breathing is jerky and irregular. Whilst observing him he was seized with spasm in the throat, and attempts to arouse him or to make him swallow brought on respiratory spasm. He lies with his eyes half open. The conjunctivæ are injected, his pupils 2½ mm.; the eyes are fixed and directed a little upwards. The skin everywhere exceedingly dry. Plantar reflex and knee-jerk present. Sordes on lips and teeth. 9.30 P.M.—The spasms have become less noisy and frequent. Tracheal râles present. Pulse 160.

The breathing became irregular and weak, and mucosanguinolent fluid was coughed up. Occasional convulsive attacks took place, and he died at 5.55 A.M., 3rd December.

His temperature the last few days had been subnormal (96°), but rose during the last day to normal, and steadily continued to rise from 8 P.M., when it was 101·6° to 106·8° at the time when death occurred.

The *autopsy* was made two and a half hours after death, with the assistance of Dr. Manson. The body was well nourished. Efforts were first made to find the parent worms of the filariæ. Axillary and inguinal glands were dissected out, cut across, the fluid expressed and examined, but no filariæ were found. The thoracic duct, receptaculum chyli, and abdominal lymphatics were carefully dissected out by Mr. Dean, Assistant Demonstrator of Anatomy, opened, and examined at various points. They presented no indications of disease, and no parent worms were found anywhere. The blood from the heart and the sinuses of the brain was collected and examined. That from each part contained abundant living embryo-filariæ of the two sizes seen during life. In the process of opening the spinal canal to examine the cord, small round or oval bodies were noticed in the dorsal

DESCRIPTION OF PLATE II.

To illustrate Dr. Stephen Mackenzie's case of Negro Lethargy.

Micro-photographs of embryo filariæ sanguinis hominis. Magnified about 100 diameters.

The larger worm to the left of the plate is the filaria sanguinis hominis major—filaria sanguinis hominis diurna (Manson).

The smaller worm to the right is the filaria sanguinis hominis minor—filaria sanguinis hominis perstans (Manson).

From micro-photographs by Mr. Roland Smith.

DANIELSSON & Co., PHOTO PRINT.

DANIELSSON & Co., PHOTO PRINT.

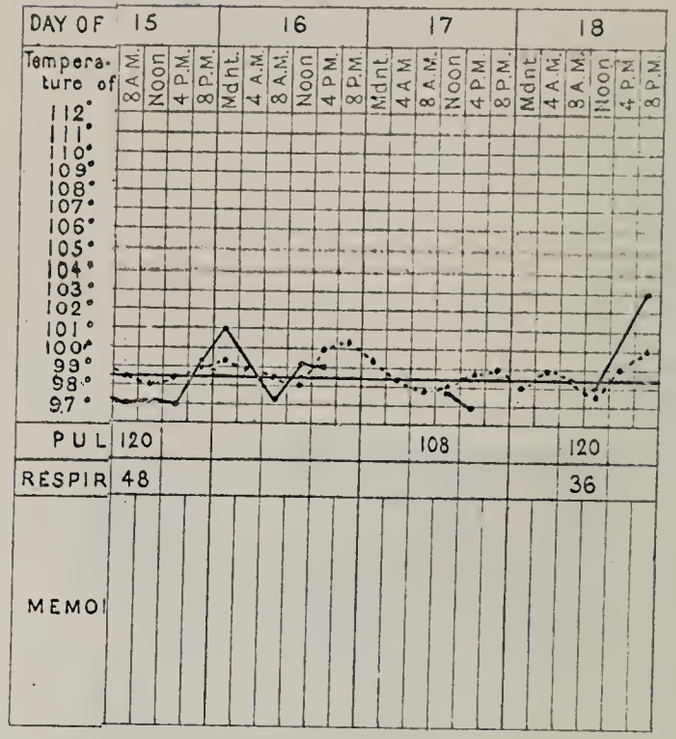
DESCRIPTION OF PLATES III AND IV.

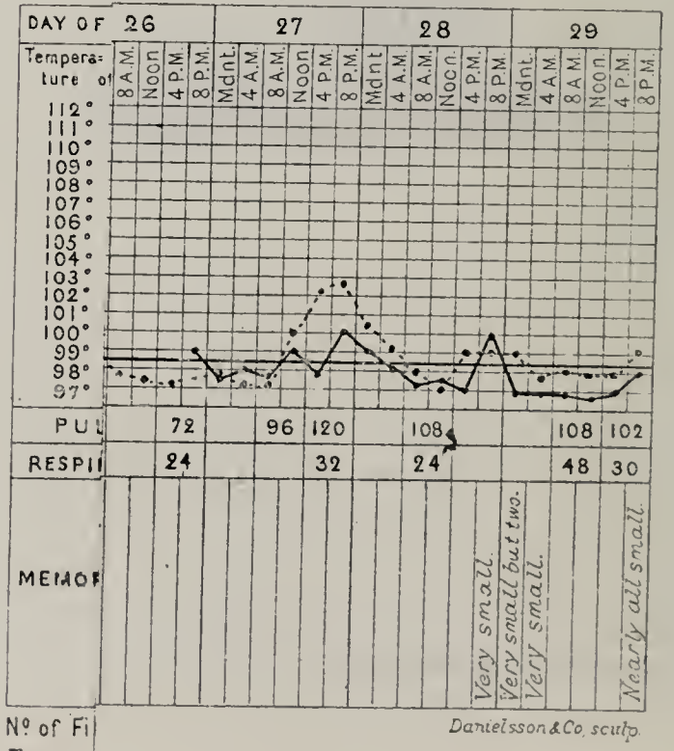
To illustrate Dr. Stephen Mackenzie's case of Negro Lethargy.

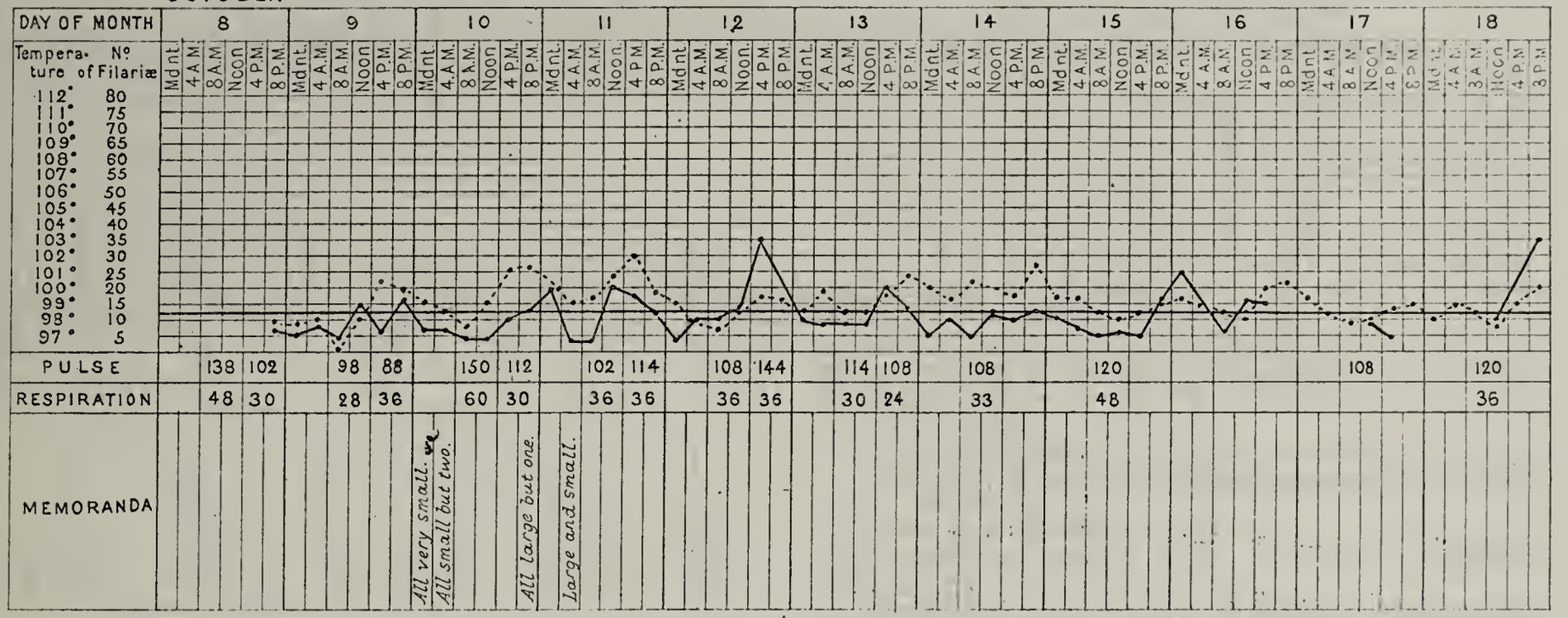
Charts showing four-hourly observations on the number of embryo filariæ in blood taken from the finger-pad, and of the temperature in the axilla.

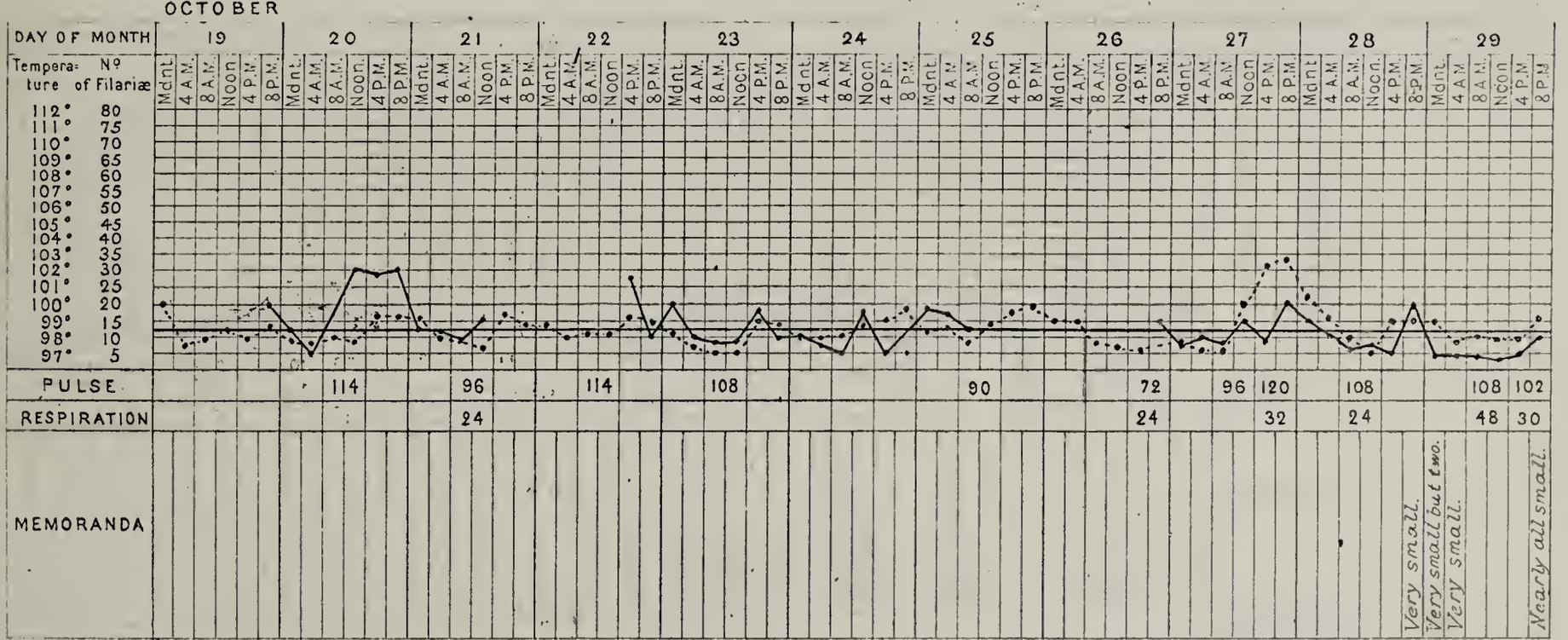
The continuous line indicates the number of embryo filariæ (filaria sanguinis hominis diurna and perstans) in 20 cubic millimetres of blood.

The broken line indicates the temperature.





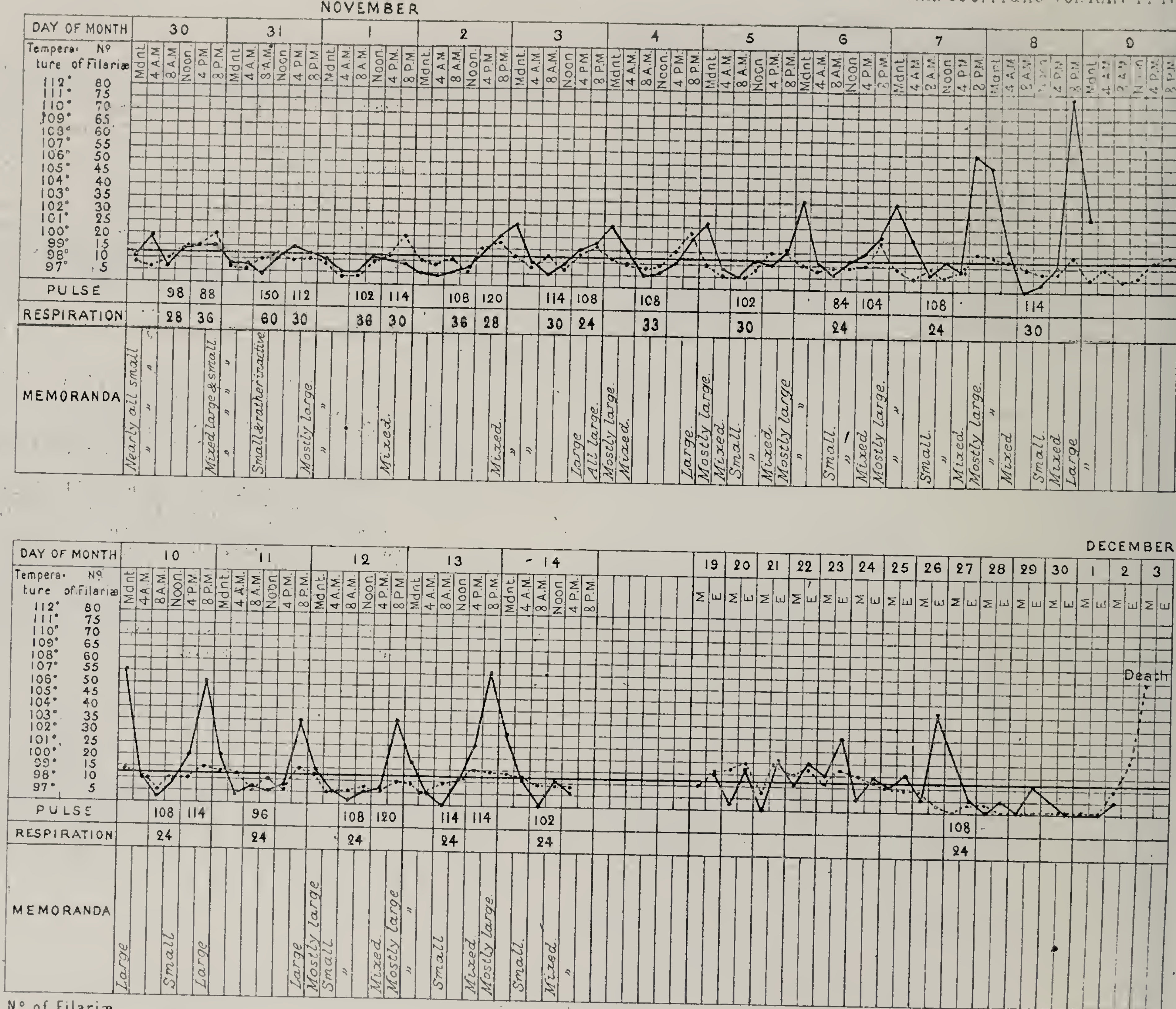




No of Filariæ_____

Temperature.....

Danielsson & Co. sculp.



Nº of Filariæ ________
Temperature ....

Danielsson & Co. sculp.

muscles, which proved on microscopical examination to be encysted or vesicular parasites, and identified as the encysted stage of the *Tænia solium, Cysticercus cellulosæ*. Examination of the muscles in various parts showed the presence of numbers of Cysticerci.

The *heart* presented no signs of disease. It weighed 10½ oz. The muscle of good colour. Valves and orifices healthy. All recesses and pouches were carefully examined for parent worms, with negative results.

Larynx.—The epiglottis and ary-epiglottic folds were œdematous, and this no doubt stood related to the difficulty of deglutition and respiratory spasm noticed during the last two days of life.

Lungs weighed each 10 oz.; they were healthy.

Liver 2 lbs. 13 oz.; slight sublobular congestion; no other sign of disease.

Spleen 7½ oz., firm and healthy.

Kidneys each weighed 6 oz., and showed no morbid changes.

Brain.—The sinuses were full of blood, and the veins of the pia mater distended. Membranes healthy. Brain substance firm, and presented no abnormal appearance, with one exception. It was carefully sliced in every direction, and on the under surface of the left frontal lobe one *Cysticercus cellulosæ* was discovered. No changes were noticed in the brain around it.

The *spinal cord* was examined throughout, but no naked-eye changes were observed.